

SUSPENDED SUBSTRATE LOW LOSS COUPLER**ABSTRACT OF THE DISCLOSURE**

A low loss suspended substrate coupler includes a substrate having a first transmission line disposed on a topside of the substrate and a second transmission line disposed on the bottom side of the substrate, thereby providing broadside transmission line coupling. To provide closer mode velocity matching, the coupler has capacitive loading or coupling to ground at discrete intervals between the two transmission lines. The capacitive loading is formed by integrating stubs in each transmission line at pre-determined intervals, each of which is opposite a corresponding one of a plurality of ground stubs on the other side of the substrate. The ground stubs are connected to ground at the outer edge of the coupler area with substrate vias or directly to the coupler housing.